Amendments to the Claims:

Please replace all prior versions, and listings of claims in the application with the following listing of claims.

Listing of claims

Claim 1 (currently amended): A method in a receiver of determining a gain offset between transmission channels in a communication system, comprising the steps of:

receiving a first signal transmitted through a first channel in the communication system;

receiving a second signal transmitted through a second channel in the communication system;

deriving a first set of channel estimates from samples ~~symbols received through a first channel~~ derived from the first signal;

deriving a second set of channel estimates from samples ~~symbols received through a second channel~~ derived from the second signal; and

determining the gain offset based on the first and second sets of channel estimates,

wherein each of the channel estimates is a model of a respective one of the first and second channels, and includes one or more channel tap coefficients.

Claim 2 (original): The method of claim 1, wherein the first and second channels are pilot channels.

Claim 3 (previously presented): The method of claim 1, wherein the first and second channels are a Dedicated Physical Channel (DPCH) and a Common Physical Pilot Channel (CPICH), respectively, in a Wideband Code Division Multiple Access (WCDMA) system.

Claim 4 (currently amended): A method in a receiver of determining a set of complex channel estimates for a transmission channel in a communication system, comprising the steps of:

receiving a first signal transmitted through the transmission channel;

receiving a second signal transmitted through a second transmission channel;

deriving a first set of channel estimates from ~~symbols received through the transmission channel~~ samples derived from the first signal;

deriving a second set of channel estimates from ~~symbols received through a second channel in the communication system~~ samples derived from the second signal;

determining a gain offset based on the first and second sets of channel estimates; and

determining the set of complex channel estimates based on the gain offset and the first and second sets of channel estimates,

wherein:

each of the channel estimates in the first set of channel estimates is a model of the transmission channel, and includes one or more channel tap coefficients; and

each of the channel estimates in the second set of channel estimates is a model of the second channel, and includes one or more channel tap coefficients.

Claim 5 (original): The method of claim 4, wherein the gain offset is determined using a second-order equation.

Claim 6 (currently amended): A method in a receiver of determining a set of complex channel estimates for a transmission channel in a communication system, comprising the steps of:

receiving a first signal transmitted through the transmission channel;

receiving a second signal transmitted through a second transmission channel;

deriving a first set of channel estimates from ~~symbols received through the transmission channel~~ samples derived from the first signal;

deriving a second set of channel estimates from ~~symbols received through a second channel in the communication system~~ samples derived from the second signal;

determining a gain offset based on the first and second sets of channel estimates; and

determining the set of complex channel estimates based on the gain offset and the first and second sets of channel estimates,

wherein the gain offset g^{ML} is determined using the following equation:

$$g^{ML} = -\frac{\beta}{2} + \sqrt{\frac{\beta^2}{4} + \alpha},$$

where :

$$\beta = \frac{\sum_{i=1}^{n} \frac{\alpha\left|\hat{h}_i^D\right|^2 - \left|\hat{h}_i^C\right|^2}{\sigma_{ei}^2}}{\sum_{i=1}^{n} \mathrm{Re}\left(\frac{\bar{\hat{h}}_i^C \hat{h}_i^D}{\sigma_{ei}^2}\right)}$$

α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for [[the]] symbols of the transmission channel, 256 is the spreading factor used for [[the]] symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$, and σ_{ei}^2 is an estimated noise variance parameter.

Claim 7 (currently amended): The method of claim 6, wherein the complex channel estimate h_i^{ML} is determined using the following equation:

$$h_i^{ML} = \frac{\alpha\hat{h}_i^D + g^{ML}\hat{h}_i^C}{\alpha + \left(g^{ML}\right)^2}$$

where: α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for [[the]] symbols of the transmission channel, 256 is the spreading factor used for [[the]] symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$.

Claim 8 (original): The method of claim 6, wherein the complex channel estimate is determined by performing a linear combination of the first and second set of channel estimates based on the gain offset.

Claim 9 (currently amended): A method <u>in a receiver</u> of determining a set of channel estimate gains for a transmission channel in a communication system, comprising the steps of:

receiving a first signal transmitted through the transmission channel;

receiving a second signal transmitted through a second transmission channel;

deriving a first set of channel estimates from ~~symbols received through the transmission channel~~ samples derived from the first signal;

deriving a second set of channel estimates from ~~symbols received through a second channel in the communication system~~ samples derived from the second signal;

determining a gain offset based on the first and second sets of channel estimates;

determining a set of channel estimate gains based on the gain offset and the first and second sets of channel estimates; and

associating the set of channel estimate gains with channel estimate phases of one of the first and second sets of channel estimates,

wherein:

each of the channel estimates in the first set of channel estimates is a model of the transmission channel, and includes one or more channel tap coefficients; and

each of the channel estimates in the second set of channel estimates is a model of the second channel, and includes one or more channel tap coefficients.

Claim 10 (original): The method of claim 9, wherein the associated channel estimate phase is the one of the first and second sets of channel estimates being from a high-power channel.

Claim 11 (previously presented): The method of claim 10, wherein the associated channel estimate phase is the one of the first and second sets of channel estimates being from a Dedicated Physical Channel (DPCH) channel in a Wideband Code Division Multiple Access (WCDMA) system.

Claim 12 (currently amended): The method of claim 4, wherein the gain offset g^{ML} is determined using the following equation:

$$g^{ML} = -\frac{\beta}{2} + \sqrt{\frac{\beta^2}{4} + \alpha},$$

where :

$$\beta = \frac{\sum_{i=1}^{n} \frac{\alpha\left|\hat{h}_i^D\right|^2 - \left|\hat{h}_i^C\right|^2}{\sigma_{ei}^2}}{\sum_{i=1}^{n} \mathrm{Re}\left(\frac{\bar{\hat{h}}_i^C \hat{h}_i^D}{\sigma_{ei}^2}\right)}$$

α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for [[the]] symbols of the transmission channel, 256 is the spreading factor used for [[the]] symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$, and σ_{ei}^2 is an estimated noise variance parameter.

Claim 13 (currently amended): The method of claim 12, wherein the complex channel estimate h_i^{ML} is determined using the following equation:

$$h_i^{ML} = \frac{\alpha\hat{h}_i^D + g^{ML}\hat{h}_i^C}{\alpha + \left(g^{ML}\right)^2}$$

where: α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for [[the]] symbols of the transmission channel, 256 is the spreading factor used for [[the]] symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$.

Claim 14 (previously presented): The method of claim 12, wherein the complex channel estimate is determined by performing a linear combination of the first and second set of channel estimates based on the gain offset.

Claim 15 (new): An apparatus in a receiver for determining a gain offset between transmission channels in a communication system, the apparatus comprising:

means for receiving a first signal transmitted through a first channel in the communication system;

means for receiving a second signal transmitted through a second channel in the communication system;

means for deriving a first set of channel estimates from samples derived from the first signal;

means for deriving a second set of channel estimates from samples derived from the second signal; and

means for determining the gain offset based on the first and second sets of channel estimates,

wherein each of the channel estimates is a model of a respective one of the first and second channels, and includes one or more channel tap coefficients.

Claim 16 (new): The apparatus of claim 15, wherein the first and second channels are pilot channels.

Claim 17 (new): The apparatus of claim 15, wherein the first and second channels are a Dedicated Physical Channel (DPCH) and a Common Physical Pilot Channel (CPICH), respectively, in a Wideband Code Division Multiple Access (WCDMA) system.

Claim 18 (new): An apparatus in a receiver for determining a set of complex channel estimates for a transmission channel in a communication system, the apparatus comprising:

means for receiving a first signal transmitted through the transmission channel;

means for receiving a second signal transmitted through a second transmission channel;

means for deriving a first set of channel estimates from samples derived from the first signal;

means for deriving a second set of channel estimates from samples derived from the second signal;

means for determining a gain offset based on the first and second sets of channel estimates; and

means for determining the set of complex channel estimates based on the gain offset and the first and second sets of channel estimates,

wherein:

each of the channel estimates in the first set of channel estimates is a model of the transmission channel, and includes one or more channel tap coefficients; and

each of the channel estimates in the second set of channel estimates is a model of the second channel, and includes one or more channel tap coefficients.

Claim 19 (new): The apparatus of claim 18, wherein the gain offset is determined using a second-order equation.

Claim 20 (new): An apparatus in a receiver for determining a set of complex channel estimates for a transmission channel in a communication system, the apparatus comprising:

means for receiving a first signal transmitted through the transmission channel;

means for receiving a second signal transmitted through a second transmission channel;

means for deriving a first set of channel estimates from samples derived from the first signal;

means for deriving a second set of channel estimates from samples derived from the second signal;

means for determining a gain offset based on the first and second sets of channel estimates; and

means for determining the set of complex channel estimates based on the gain offset and the first and second sets of channel estimates,

wherein the gain offset g^{ML} is determined using the following equation:

$$g^{ML} = -\frac{\beta}{2} + \sqrt{\frac{\beta^2}{4} + \alpha},$$

where :

$$\beta = \frac{\sum_{i=1}^{n} \frac{\alpha\left|\hat{h}_i^D\right|^2 - \left|\hat{h}_i^C\right|^2}{\sigma_{ei}^2}}{\sum_{i=1}^{n} \mathrm{Re}\left(\frac{\overline{\hat{h}_i^C}\hat{h}_i^D}{\sigma_{ei}^2}\right)}$$

α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for symbols of the transmission channel, 256 is the spreading factor used for symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$, and σ_{ei}^2 is an estimated noise variance parameter.

Claim 21 (new): The apparatus of claim 20, wherein the complex channel estimate h_i^{ML} is determined using the following equation:

$$h_i^{ML} = \frac{\alpha\hat{h}_i^D + g^{ML}\hat{h}_i^C}{\alpha + \left(g^{ML}\right)^2}$$

where: α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for symbols of the transmission channel, 256 is the spreading factor used for symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$.

Claim 22 (new): The apparatus of claim 20, wherein the complex channel estimate is determined by performing a linear combination of the first and second set of channel estimates based on the gain offset.

Claim 23 (new): An apparatus in a receiver for determining a set of channel estimate gains for a transmission channel in a communication system, the apparatus comprising:

means for receiving a first signal transmitted through the transmission channel;

means for receiving a second signal transmitted through a second transmission channel;

means for deriving a first set of channel estimates from samples derived from the first signal;

means for deriving a second set of channel estimates from samples derived from the second signal;

means for determining a gain offset based on the first and second sets of channel estimates;

means for determining a set of channel estimate gains based on the gain offset and the first and second sets of channel estimates; and

means for associating the set of channel estimate gains with channel estimate phases of one of the first and second sets of channel estimates,

wherein:

each of the channel estimates in the first set of channel estimates is a model of the transmission channel, and includes one or more channel tap coefficients; and

each of the channel estimates in the second set of channel estimates is a model of the second channel, and includes one or more channel tap coefficients.

Claim 24 (new): The apparatus of claim 23, wherein the associated channel estimate phase is the one of the first and second sets of channel estimates being from a high-power channel.

Claim 25 (new): The apparatus of claim 24, wherein the associated channel estimate phase is the one of the first and second sets of channel estimates being from a Dedicated Physical Channel (DPCH) channel in a Wideband Code Division Multiple Access (WCDMA) system.

Claim 26 (new): The apparatus of claim 18, wherein the gain offset g^{ML} is determined using the following equation:

$$g^{ML} = -\frac{\beta}{2} + \sqrt{\frac{\beta^2}{4} + \alpha},$$

where :

$$\beta = \frac{\sum_{i=1}^{n} \frac{\alpha\left|\hat{h}_i^D\right|^2 - \left|\hat{h}_i^C\right|^2}{\sigma_{ei}^2}}{\sum_{i=1}^{n} \mathrm{Re}\left(\frac{\bar{\hat{h}}_i^C \hat{h}_i^D}{\sigma_{ei}^2}\right)}$$

α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for symbols of the transmission channel, 256 is the spreading factor used for symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$, and σ_{ei}^2 is an estimated noise variance parameter.

Claim 27 (new): The apparatus of claim 26, wherein the complex channel estimate h_i^{ML} is determined using the following equation:

$$h_i^{ML} = \frac{\alpha\hat{h}_i^D + g^{ML}\hat{h}_i^C}{\alpha + \left(g^{ML}\right)^2}$$

where: α is a scale factor based on a spreading factor such that $\alpha = (sf/256)(n_D/n_C)$, where *sf* is the spreading factor used for symbols of the transmission channel, 256 is the spreading factor used for symbols of the second channel, and n_D and n_C are, respectively, the numbers of symbols coherently summed to get the first set of channel estimates $\hat{h}_i^D$ and the second set of channel estimates $\hat{h}_i^C$.

Claim 28 (new): The apparatus of claim 26, wherein the complex channel estimate is determined by performing a linear combination of the first and second set of channel estimates based on the gain offset.